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The Stability of Mode Preferences: Implications for Tailoring in Longitudinal Surveys

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Abstract

One suggested tailoring strategy for longitudinal surveys is giving respondents their preferred mode. Mode preference could be collected at earlier waves and used when introducing a mixed-mode design. The utility of mode preference is in question, however, due to a number of findings suggesting that preference is an artefact of mode of survey completion, and heavily affected by contextual factors. Conversely, recent findings suggest that tailoring on mode preference may lead to improved response outcomes and data quality. The current study aims to ascertain whether mode preference is a meaningful construct with utility in longitudinal surveys through analysis of data providing three important features: multiple measurements of mode preference over time; an experiment in mode preference question order; and the repeated measures within respondents collected both prior and after the introduction of mixed-mode data collection. Results show that mode preference is not a stable attitude for a large percentage of respondents, and that these responses are affected by contextual factors. However, a substantial percentage of respondents do provide stable responses over time, and may explain the positive findings elsewhere. Using mode preference to tailor longitudinal surveys should be done so with caution, but may be useful with further understanding.

Keywords: Mode preference; tailoring; mixed-mode designs; question order; context effects



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1 Introduction

Obtaining survey responses across time in a longitudinal study leads to unique data collection issues compared to a cross-sectional survey, but there are also unique aspects of the longitudinal design that can be used to the benefit of the study. For example, the survey design can be adapted by taking advantage of information about respondents' life and preferences collected at earlier waves to tailor to the individual at subsequent waves. Doing so may positively influence survey outcomes through reducing burden and/or increasing interest in the survey (e.g. Lynn 2013). Examples of this tailoring include using wording that is more relevant to respondents' current situation in pre-survey mailings (Lynn 2014) or inclusion of questions of particular interest to the respondent (Oudejans 2012).

Accommodating panel members by interviewing them in their preferred mode may also increase the chances of response and data quality (Olson, Smyth and Wood 2012; Smyth, Olson, and Kasabian 2014). This form of tailoring may be of particular interest given that longitudinal surveys are increasingly incorporating mixed-mode designs as a cost consideration (e.g. Jäckle, Burton and Lynn 2015). Utilizing information on mode preference collected at earlier waves, when introducing mixed-modes for cost effectiveness and response rates, may also maximize data quality. For this usage to be effective requires that mode preference is an actual and stable attitude. However, previous findings suggest that responses to mode preference questions may be an artefact of the survey mode the preference question is asked in (e.g. Millar, O'Neill, and Dillman 2009).

The question about whether mode preferences are "real" or contextually-based is an important one, as the answer could determine the usefulness of such measures in design decisions. The limited understanding of mode preference exists largely because preference has only been asked to respondents at one point in one mode. There have not been multiple mode preference measures from the same respondent at different times, and how these measures change as the mode the respondent completes the survey may also change. This paper aims to answer questions about stability of mode preference taking advantage of a longitudinal survey providing three important features: the repeated collection of mode preference from the same individuals over time; an experiment in mode preference question order; and the repeated measures being collected both prior and after the introduction of an experiment on mixed-mode data collection. The stability (or lack thereof) of mode preference over time is most important in showing whether there is stability in atti-

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tudes, while the effects of two different contextual factors will inform the potential utility of this construct in longitudinal studies. Specifically, mode of response is the contextual factor of most importance, given the argument that mode preference is a mode artefact. However, question order effects can add to the understanding of how context generally can influence mode preference.

1.1 What is mode preference?

A number of studies have defined mode preference based on revealed preferences; that is, respondents are given a choice between modes and whichever they choose is seen as the preferred mode (Diment and Garret-Jones 2007; Haan, Ongena and Aarts 2014; Shih and Fan 2007). Following Olson et al. (2012), the view taken here is this revealed preference is more appropriately seen as “mode choice” (generally among a constrained set of options) rather than “mode preference”. Rather, mode preference is defined as a positive view towards being interviewed in that mode.

Several studies have directly asked respondents about mode preference as part of a survey questionnaire. No consistent preference has been identified, with most survey modes being preferred in at least one study. Findings have shown preferences for face-to-face surveys (Groves and Kahn 1979), telephone surveys (Olson et al. 2012), internet surveys (Millar et al. 2009; Tarnai and Paxson 2004), and mail surveys (Millar et al. 2009; Tarnai and Paxson 2004). Respondents also tend to report preferring the mode in which they are completing the survey at much higher rates than other modes (Groves and Kahn 1979; Millar et al. 2009; Tarnai and Paxson 2004).

1.2 Context Effects and Mode Preference

That mode preference is related to the mode of survey completion suggests responses may be affected by the survey context. When asked about subjective phenomena, respondents construct a representation based on both chronically-accessible and temporally-accessible information (Sudman, Bradburn, and Schwarz 1996). Context effects are more likely to arise when there is less reliance on chronically-accessible information (which is context-independent) than temporarily-accessible information (which is context-dependent) (Sudman et al. 1996). Temporarily-accessible information can lead to context effects depending on how it is used. The inclusion/exclusion model explaining context effects (Schwarz and Bless 1992; Bless and Schwarz 2010) suggests that temporarily-accessible information can either be assimilated or used as a contrast when assessing the representation of the target. Assimilation effects arise when the temporarily-accessible information is used in forming a representation of the target, while contrast effects occur where the information is used as a comparison standard for the target representation.

It is reasonable to assume many respondents have not given much or any deep thought about what mode they would like to be surveyed in. As such, chronically-accessible information will be limited for mode preference questions, and context effects may be expected as respondents rely on temporarily-accessible information. This reliance on temporarily-accessible information should also lead to more instability in reported preference, especially as the context changes. However, some respondents may have more chronically-accessible information regarding mode preference than others. For example, frequent internet users may have more information to draw upon regarding interacting with web designs (if not surveys specifically) than more infrequent users. In a longitudinal study, respondents who have been in the panel for a longer time will have more experience with the survey and may also have more developed preferences for their survey experience. In such cases, it may be that context effects are reduced, and with the increased chronically-available information there may be stability in mode preferences.

For those needing to rely more on temporarily-accessible information, there are possibly different sources that may provide context. Many studies have demonstrated how question order can provide context to a subjective measure through conversational norms (e.g. Schwarz, Strack and Mai 1991; Garbarski, Schaeffer, and Dykema 2015). If mode preference does not bring to mind chronically-accessible beliefs, expressed preference may also be affected by the placement of the mode preference measure in the questionnaire. If preceding questions bring to mind information pertinent to mode preferences, a context effect may occur. Specifically, if the preceding question(s) bring to mind information that “belongs” to the same category, such as questions directly related to attitudes towards specific modes included in the mode preference question, assimilation effects could be expected (Sudman et al. 1996). The information assimilated could be positive or negative, affecting the report of preferences towards or away from a particular mode.

As an example, asking first specifically about web surveys may lead frequent users of the internet to recall more positively related information to assimilate. Conversely infrequent users may have little to assimilate, or recall negative information related to the reasons of their infrequent use. However, as noted above, more frequent internet users may also not be as affected by this type of context due the availability of more chronically-accessible information. Survey experience may also affect the amount and content of accessible information. Those respondents who have more experience with the survey (e.g. participated in more waves) may have more developed attitudes towards their survey experiences. Further, those with more cognitive ability generally may be less affected by question order, possibly due the ability to make greater efforts to recall information (Narayan and Krosnick 1996).

While most research has focused on question ordering leading to context effects, it is more likely that a wide variety of information could be brought to

mind and result in context effects, including survey factors such as the mode of response (Smyth, Dillman, and Christian 2009). The respondent's survey behavior in the current mode may provide context and affect their response (Schwarz and Bohner 2001). Their survey experience in a particular mode will provide temporarily-accessible information, which may weigh heavily in response choice if little chronically-accessible information is available. Lacking prior beliefs, a positive survey experience could provide positive implications to bear on the mode preference question, increasing the chance the mode of data collection would be selected. Conversely, a negative survey experience could lead to negative implications being brought to mind, leading to some choice away from the mode of data collection. Given the voluntary nature of surveys, it can be expected that most experiences would at least not be overly negative, or else the survey could be terminated. The possibility that more survey experiences will be seen as positive, leading to positive temporarily-accessible information, would lead to results found in other studies that the mode of data collection is also the preferred mode.

Other aspects of the survey experience may also affect the information available to respondents when asked about mode preferences. For example, the presence of an interviewer may lead respondents to select an interviewer-administered mode (particularly the mode of administration) out of politeness. Particularly in longitudinal studies, where the same interviewer often returns to the same home at subsequent waves, the mode preference question may be perceived as an indicator of the respondent's attitude toward the interviewer. In such cases, the selecting the administered mode as the one preferred could be seen as the socially desirable response.

1.3 Stability of Mode Preferences

The above discussion suggests that mode preferences are largely the result of context effects, such as question order and mode of survey administration. However, it may be that mode preferences are a stable belief for some part the population, or at least some have less varying attitudes towards particular modes. This stability occurs when the available information brought to mind remains consistent in regards to the survey modes, and may be related to the context remaining the same, the amount of chronically-available information, and possibly attitude strength (Schwarz and Bohner 2001). That mode preference may be stable for at least some is suggested by two recent, related studies. Olson et al. (2012) find that when mode preference and mode offered match, cooperation increases for phone surveys and participation in both web and phone surveys. Using the same data, Smyth et al. (2014) find that responding in a preferred mode appears to reduce satisficing behaviors and improve data quality.

That a match between mode preference and the survey mode offered is related to positive outcomes suggests the measure's potential usefulness. Still, the authors

acknowledge that these findings are in contrast with those suggesting preference is a context-dependent measure. Indeed, the mode preference selected most often in this data, the telephone, was also the mode being used to conduct the initial interviews and ask the preference question. However, it is possible these results are driven by some subset of respondents that have real and stable mode preferences, while many other respondents are largely affected by the context.

Alternatively, it could be that mode preference is generally a stable attitude which affects survey behavior, and the initial data collection would be as affected by this preference as any later data collection would. If so, those preferring whatever mode is being used for interviews would respond at higher rates, the effect of which would manifest in questions on mode preference. Such an effect would in part explain the number of previous findings suggesting mode preference is an artefact of the mode of administration. There is a dearth of evidence that there is stability in mode preference or that it is largely context-driven, however, in part because of the type of data previously available. Previous studies have not explored how mode preference changes or remains stable over time in a survey within individuals, and have not explored possible contextual factors that may influence mode preference responses.

If respondents maintain the same response across time, unaffected by question order and in different modes, this would suggest mode preference is a stable attitude. Conversely, changes in responses over time, in relation to question order and/or modes would suggest that it is largely a context-dependent measurement. There may also be a mix of the two, whereby some respondents do display stable mode preferences, while others' responses are highly affected by the context. The following sections begin to provide needed evidence using repeated mode preference measures in a longitudinal mixed-mode design, taking advantage of a question-order experiment which adds further evidence to how context affects this measure.

2 Data and Methods

2.1 Sample

The Innovation Panel (IP) longitudinal survey is part of *Understanding Society: The United Kingdom Longitudinal Household Study*. The IP is a vehicle for experimentation regarding aspects of survey design in a longitudinal survey context. It uses a multi-stage probability sample of persons and households in England, Scotland, and Wales. At the fourth wave, fielded in 2011, a refreshment sample was also drawn. Waves are conducted annually, and interviews are attempted with all household members 16 years of age and older. Prior to Wave 5, all interviews were conducted by interviewers (all CAPI at Wave 4). At Wave 5, fielded in 2012, a

random two-thirds of sample households were allocated to a mixed-mode (MM) web and CAPI design, while the other third were administered the standard single-mode CAPI design. In the mixed-mode treatment, if any household member did not respond to the web survey within two weeks, an interviewer was sent to attempt a face-to-face interview with all non-responding household members. The same sample allocation was maintained at Wave 6 (in 2013). At the end of initially scheduled data collection period, contact was again attempted with some non-respondents, with the ability to complete the survey via a CATI survey (full details available at www.understandingsociety.ac.uk). However, few respondents completed CATI ($n=8$ in the presented data), and are not considered when examining mode of response.

The data on mode preference comes from the fourth through sixth waves of the IP. Response rates for these waves are calculated as completion rates among those responding at their initial wave of interview. At the initial wave, conducted in 2008, the response rate by original sample members was 51.7%. The Wave 4 completion rate amongst Wave 1 respondents was 54.7%; at Wave 5 there was a 45.9% completion rate among those who responded at Wave 1; and at Wave 6 a 45.9% completion rate among Wave 1 respondents. These completion rates produce a net response rate of 28.3% at Wave 4, 23.7 % at Wave 5, and 23.7% at Wave 6 (AAPOR RR3). For the refreshment sample, the Wave 4 response rate (their initial wave) was 48.8%, with completion rates among these of 82.0% at Wave 5, and 76.8% at Wave 6. These reinterview rates produce a net response rate of 40.0% at Wave 5 and 37.4% at Wave 6 (AAPOR RR3). Although attrition is significant, given the randomization of the experimental technique response propensity is not expected to interact with the experimental design and outcomes. That is, the random distribution of people with varying levels of response propensities to the experimental conditions suggest the results are not driven by differential non-response. As the goal is examining mode preference stability over time, only those respondents who answered the mode preference question at all three waves are examined ($n=1477$).

2.2 Mode Preference Measurement

In Waves 4 through 6, a set of five questions regarding mode preferences were asked. Two questions asked respondents to pick their most and least preferred modes among four modes (face-to-face, telephone, mail and web). Three additional questions asked about the likelihood of response (on a 0 to 10 scale, 0 = definitely would not do, 10 = definitely would do) for the specific modes of telephone, mail and web (complete question wordings available in Appendix A). A likelihood was not asked for face-to-face surveys, as the respondent was responding in a face-to-face survey at IP4. As such, it seemed apparent face-to-face was a mode in which they would complete a survey, and asking may seem redundant to the respondent.

The question asking about most preferred mode with four choices is the target question of analyses, as this is how mode preference is most frequently measured (Millar et al. 2009; Olson et al. 2012; Smyth et al. 2014; Tarnai and Paxson 2004). Further, given that there is not a specific question rating face-to-face surveys, for the reason noted above, a comparison of these questions does not allow a complete understanding of mode preference.

The order of the specific mode likelihood and most and least preferred mode questions were varied among two randomly assigned groups. One group was first asked the specific mode questions (always in the order of telephone, mail, web) and then the target question asking about most preferred mode among four choices, followed by least preferred mode. The other group was asked the target most preferred mode question first, followed by the least preferred mode, and then the three specific mode questions. Households were randomly assigned to one of these orderings at the fourth wave, and this ordering was maintained at subsequent waves. This experiment is another check on the possible context-dependent nature of mode preference questions. Question order effects are found when the order of specific and global assessments is changed (e.g. Schwarz, Strack, and Mai 1991). Again, these effects may be attributed to a greater reliance on temporally-accessible relative to chronically-accessible information (Sudman et al. 1996).

3 Results

3.1 Mode Preference Over Time

Mode preference, based on the frequently used target question asking for a preferred choice from four modes, is presented in Table 1 for the three waves this was asked. Across all three waves, the most preferred mode is a face-to-face interview, with a web survey the second most selected mode across all waves. Mail was preferred by a small percentage each wave, while very few expressed any preference for the telephone. However, there is substantial change in the numbers and percentage selecting each mode across waves. The percentage expressing a preference for face-to-face interviews decreased overall by 13.1 percentage points from the fourth to sixth wave, a relative decrease of 20.9%. Similarly, those selecting mail surveys decreased from 14.5% to 6.5% across the three waves, a 55.2% relative decrease. Conversely, there was a large increase in the number of people expressing a preference for web surveys, which coincides with the introduction to the survey of web as a mode of data collection. Nearly twenty percent more respondents selected web surveys at the sixth wave compared to the fourth wave, a 98% relative increase. Overall, 39.5% of respondents (n=583) selected a different mode at the fifth wave than they selected at the fourth, and 26.7% (n=395) changed their response from the

Table 1 Mode Preference by Wave (in Percent)

	Wave 4 (2011)	Wave 5 (2012)	Wave 6 (2013)
Face-to-Face	63.0	51.2	49.9
Telephone	1.3	0.7	1.0
Mail	14.3	10.2	6.5
Web	20.3	35.1	40.2
No Preference	1.2	2.9	2.4

n=1477 for all waves

fifth to the sixth waves. These changes were made by 229 respondents (15.5% of the sample) who changed selections from both the fourth and fifth waves and the fifth and sixth waves, 354 (24.0%) who switched only at the fourth to fifth waves, and 166 (11.2%) switching only from the fifth to sixth waves. This totals 749 respondents (50.7% of the sample) who indicated different mode preferences across the three years at least one time.

Given these changes are within the same respondents across time suggests there is a large amount of instability in mode preference, and the possibility it is a context-dependent attitude. Regardless of the causes, such as switches in mode of survey completion (see section 3.3), the fact that dramatic changes in response distributions occur in the aggregate suggests that the attitude is not firmly held and likely more affected by temporally-accessible information, at least for a significant portion of the population. To further explore the possible existence of context effects in mode preference responses, we next turn to the mode preference question-order experiment.

3.2 The Ordering of Mode Preference Questions

The target mode preference question is a global evaluation, asking respondents to select one mode as preferred out of four options. Conversely, three questions asked about evaluations of specific modes (telephone, mail, web). The impact of the ordering of the global and specific measures is presented in Table 2. There is a clear question order effect, which is also found and replicated at subsequent waves. When the specific rating questions preceded the target question, more people selected CAPI as their preferred mode than when the target question was asked first. The reverse is true for selection of the web as the preferred mode in the target question; when this global question was asked first, more respondents chose the web as the preferred mode than when this question followed the specific questions.

Table 2 Mode by Preference by Question Ordering and Wave (in Percent)

	Wave 4 (2011)		Wave 5 (2012)		Wave 6 (2013)	
	Specific-Global	Global-Specific	Specific-Global	Global-Specific	Specific-Global	Global-Specific
Face-to-Face	67.6	57.8	54.0	48.1	51.9	47.6
Telephone	1.7	0.9	0.8	0.6	1.2	0.7
Mail	13.0	15.8	10.9	9.3	7.0	5.9
Web	16.7	24.4	32.2	38.3	38.3	42.3
No Preference	1.2	1.2	2.2	3.7	1.5	3.5
	$\chi^2_4 = 20.29$ p<0.05		$\chi^2_4 = 10.60$ p<0.05		$\chi^2_4 = 9.81$ p<0.05	

n=1477 for all waves

Of the three modes asked about specifically, web and face-to-face are the most affected in the target mode preference question. The specific question about web surveys was asked immediately previous to the target question in the specific-global order, while the design did not include a specific question about face-to-face surveys. This ordering appears to have brought more information about the web mode to mind which was assimilated when answering the target question. The results suggest that the additional temporarily-accessible information had negative implications (Sudman et al. 1996; Tourangeau, Rips, and Rasinski 2000), leading to fewer people choosing web as their preferred mode. It is unclear what these negative implications are; however, the fact this negative impact exists suggests the limited nature that chronically-accessible information has on mode preference (Sudman et al. 1996).

Respondents that may be expected to have more chronically-accessible information about survey modes also show similar patterns. Those who use the internet daily show the same significant order effect as those who use it less frequently (as does the combination of daily and several times a week internet users compared to less frequent users). The same significant order effect is also found at IP4 among both original sample members, who have more survey experience generally, and IP4 refreshment sample members, asked these questions upon their first experience. The persistence of this effect suggests the potential importance of temporally-accessible information, indicating the impermanence of mode preferences. However, there is some evidence that more educated respondents are less affected by the order experiment. At IP4, where mode is constant, differences are somewhat reduced and are only borderline significant among those with higher education (p=0.054). Higher educated respondents have been found less susceptible to other

question order experiments (e.g. Narayan and Krosnick 1996), suggesting the possibility that for some less effort is used to recall information leading to more reliance on the temporarily-accessible information.

Although ordering has an apparent impact on responses within a wave, the ordering of the questions does not appear to have an impact on the change of mode preferences across waves. The order affects responses to mode preference, but given the question order stays the same for respondents across waves, it is not particularly surprising the ordering does not affect change in responses. Cross-tabulations of change across waves and question order (not shown) found no effect between the fourth and fifth waves ($\chi^2_1 = 0.001$, $p=0.982$) or between the fifth and sixth waves ($\chi^2_1 = 0.180$, $p=0.672$). While response is affected within wave by question order, the change identified may be explained by other contextual factors, such as mode of response, which changed for some respondents across waves.

3.3 The Impact of Mode of Response on Mode Preference

The fourth wave was conducted in one mode (CAPI) and is the only available data point on mode preferences at this time. As in previous studies, the mode of completion was also selected as the preferred mode by the majority. However, an option to take the Innovation Panel survey via the web was given to some respondents at the fifth and sixth waves. The change in preferred mode among respondents to the web survey is the key to identifying the impact of mode of response on mode preference.

Table 3 presents the percentage of respondents switching their mode preference to web, another mode, or reporting the same mode preference by the mode experimental condition (CAPI-only or mixed-mode) and mode completed in at Wave 5. Those completing by web at Wave 5 changed modes from Wave 4 (where only CAPI was offered), and also changed their reported mode preference at much higher rates than anyone responding by CAPI. More web respondents changed their mode preference than repeated their response from Wave 4, whereas a large majority of both sets of CAPI respondents did not change their mode preference.

The percentage of those switching to web as their preferred mode is several times greater among web respondents than CAPI respondents in either mode condition. Additionally, the number switching to web as their preferred mode when responding by web ($n=220$) is greater than all CAPI respondents switching to web combined across conditions ($n = 81$), even though the number of all CAPI respondents combined ($n=1005$) greatly outnumbers the number of web respondents ($n=472$). Of the web respondents who changed their mode preference response (total 59.5%, $n=281$), 78.3% switched their preferred mode to web. Conversely, of those assigned to the CAPI-only condition, among those changing (34.0%, $n=183$), 30.1% switched to web; an even smaller percentage (21.8%) switched to web among those switching preference (25.5%, $n=119$) in the mixed-mode CAPI condition.

Table 3 Percent Switching of Mode Preference by Mode of Response, Waves 4 to 5

Mode of Response, Wave 5	Change to Web	Change to Other than Web Mode	No Change
CAPI-Only	10.2	23.8	66.1
MM, CAPI	5.6	20.0	74.5
MM, Web	46.6	12.9	40.5
Total	20.4 (n=301)	19.1 (n=282)	60.5 (n=894)

$n = 1477 \quad \chi^2_4 = 301.59 \quad p < 0.001$

That a significantly smaller percentage of CAPI respondents in the mixed-mode condition switched to web as their stated mode preference than even those in the CAPI-only condition suggests that not only completion of the mode, but also simply offering an alternative mode may affect mode preference distributions.

The sixth wave web was again offered, and many fewer respondents switched mode across waves. Table 4, like Table 3, shows the amount of change in mode preferences from the previous to current wave, for Waves 5 and 6, but by the combination of modes completing the survey across both waves. While those in the CAPI-only condition could only complete a face-to-face interview, those in the mixed-mode condition could either complete via the same mode as in Wave 5 or the other offered mode. Few web respondents at Wave 5 switched their mode of response back to CAPI at Wave 6 (38 out of 472 Wave 5 web respondents). More respondents completed the web survey at Wave 6 after completing via CAPI at Wave 5 (128 of 466 Wave 5 mixed-mode CAPI respondents).

Again, the greatest amount of change in mode preferences occurs among those switching mode of completion from that of the previous wave. Similarly, among those moving to web from CAPI, more respondents changed their mode preference than repeated their response. Most of the change comes from these new web respondents switching their preferred mode response to match the survey mode of completion. Although a small number, those completing CAPI at Wave 6 after completing web at Wave 5 largely changed their responses to match the mode of completion as well; 16 of the 24 (66.7%) who changed mode preference did so by saying their preferred mode was now CAPI.

This changing by mode is not related to the question order; log-linear models of the three-way table (mode preference x question order x mode of response) find non-significant three-way interactions at both Wave 5 ($\chi^2_4 = 6.54 \quad p=0.162$) and Wave 6 ($\chi^2_4 = 7.56 \quad p=0.1089$). Given this lack of interaction, and the number of respondents shifting across modes of completion and switching mode preference,

Table 4 Percent Switching of Mode Preference by Mode of Response Across Waves 5 to 6

Mode of Response, Waves 5-6	Change to Web	Change to Other than Web Mode	No Change
CAPI-Only	7.4	19.9	72.7
MM, CAPI-CAPI	3.9	10.8	85.4
MM, Web-CAPI	10.5	52.6	36.8
MM, CAPI-Web	43.0	17.2	39.8
MM, Web-Web	13.7	8.1	78.1
Total	11.6 (n=171)	15.0 (n=220)	73.4 (n=1078)

n = 1469 $\chi^2_8 = 232.01$ p<0.001

Table 5 Mode Preference at Wave 6, by Mode of Response (in Percent)

	CAPI-Only	MM, CAPI	MM, Web
Face-to-Face	70.6	83.7	7.9
Telephone	0.9	0.5	0.5
Mail	5.7	5.9	7.7
Web	21.7	9.1	79.6
No Preference	1.7	0.8	4.3

n = 1462 $\chi^2_8 = 695.16$ p<0.001

Table 5 presents the overall distribution of mode preference by mode of completion at Wave 6. The first column shows that those who were offered only CAPI at all waves ended with a mode distribution similar to the initial measure at Wave 4. There are more respondents saying they prefer a face-to-face interview and less choosing mail as their preferred mode, but otherwise is a close approximation to the initial response distribution.

While the final outcome for CAPI-only respondents may be similar to the initial measure, it is important to note this occurs in spite of the greater amount of individual-level change for this group observed in Tables 3 and 4. A total of 34.0% of this group changed their preference at Wave 5 and 27.3% changed at Wave 6. That the end overall distribution shows substantially less change from the fourth to sixth waves suggests the possibility of random switching. When people do respond differently, a possible explanation of similarity of overall distribution is if change to/from a selection is largely random with approximately equal chance.

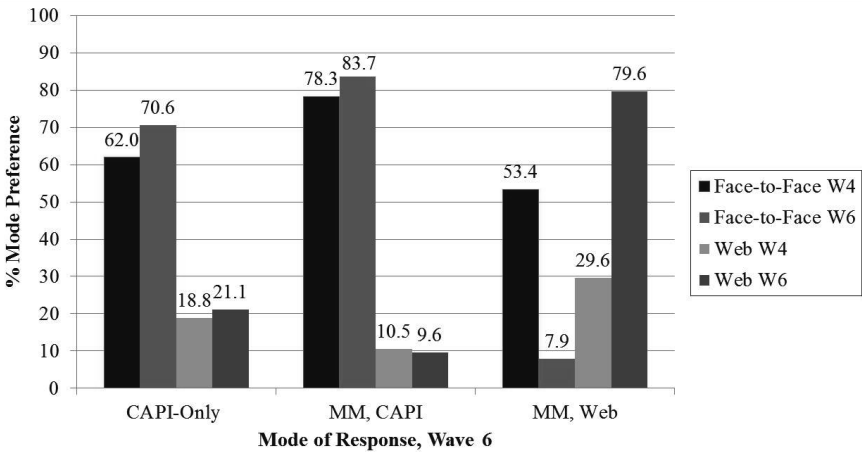


Figure 1 Mode Preference at W4 and W6 by W6 Mode of Response

Table 5 further shows that those offered web initially, but responding in CAPI, have significantly higher selection of CAPI and lower selection of web than other groups. Most striking is the shift in distribution among web respondents. Nearly 80% of web respondents selected web as their preferred mode, compared to the near 20% of the whole sample at Wave 4 or those in the CAPI-Only condition at Wave 6. Only 158 of the 444 (35.6%) of the web respondents indicating web mode preference at Wave 6 also made this choice at Wave 4. Conversely, a much smaller percentage, 7.8%, of web respondents selected a face-to-face interview as preferred; however, 53.4% of these respondents selected face-to-face as their preferred interview at Wave 4. Figure 1 displays these changes in preferences of face-to-face and web modes (the top selections) from Wave 4 and Wave 6 based on the mode of response at Wave 6.

Web respondents in particular show the drastic change in responses across waves. There was a decrease of nearly 45.5% selecting face-to-face from Wave 4 to Wave 6, while selection of web as the preferred mode increased nearly 50% in that same interval. However, there is some evidence that there is a relation between mode preference at earlier waves and mode of response at later waves. In particular, those responding in the mixed-mode CAPI version reported preferring face-to-face interviews than others at both Wave 4 and Wave 6. Similarly, those responding via the web in Wave 6 also selected a preference for web more the overall sample.

3.4 The Potential Utility and Stability of Mode Preference

The results above point to the conclusion that mode preferences are largely unstable, displaying a large amount of change across time and context. This instability and context influence suggests a possible lack of utility for these measures in designing surveys. Conversely, studies by Olson et al. (2012) and Smyth et al. (2014) stand in contrast to this conclusion suggesting the use of mode preference. A question then arises as to whether the current mode preference data, even with the large amount of change and context effects, has some relation with outcomes. Work on the use of mode preference in predicting response outcomes in the IP is ongoing, but initial results show mixed evidence that matching preference with mode offered improves response (Kaminska and Lynn 2013).

However, in a sequential mixed-mode design, as was started at the fifth wave of the IP, respondents assigned to the mixed-mode condition can respond via the web on the initial invitation. Those that do not are then offered a face-to-face alternative; in this way, respondents self-select into a mode of response (see Jackle, Burton, and Lynn 2015). Table 5 and Figure 1 provides evidence that those in the mixed-mode conditions have significantly higher levels of selecting their mode of response at Wave 6 as the preferred mode across waves modes, which may suggest stable mode preferences among some. If respondents who do prefer face-to-face surveys self-select into the CAPI-mode, while those preferring the web self-select into that mode, then the expectation would be greater percentages for the selected modes (as observed).

To explore this possibility that preference affects the selection of modes, logistic regression models were estimated predicting the mode of completion at the fifth wave of the IP, the first wave web was offered. The models include only those respondents assigned to the mixed-mode condition, as those not in the mixed-mode condition could only participate in the face-to-face survey. The models predict the probability of selecting into web response in the first model (i.e. 1= Web response, 0= Face-to-face response), and selecting into the face-to-face condition (i.e. 1= Web response, 0= Face-to-face response). The important variable and difference in the two models is the inclusion of mode preference at the previous (fourth) wave. For the web selection model, preference is indicated web versus anything else; in the CAPI completion model, preference is face-to-face versus anything else. That is, this measure is measuring in both models whether the preferred mode at the fourth wave matched the outcome variable at the fifth wave.

Since mode of response has an apparent impact on mode preference, only fourth wave responses predicting mode of response at the fifth are used, as the fourth is the last wave everyone responded in the same mode. Also included in the models are respondent characteristics of age (in years), sex (female =1), education (college or professional degree versus no higher education), race (white or

Table 6 Odds Ratios for Mode of Response at IP Fifth Wave

	Web Response	F2F Response
Daily Internet Use (at wave 4)	3.213*	0.280*
Female	1.064	0.933
College/Professional Degree	1.302	0.726
Age	0.998	1.000
Income	1.000	1.000
White	1.835*	0.573*
Employed	1.889*	0.503*
Matched Preferred Mode	2.767*	2.034*

n = 933; *p<0.001

not), employment status (employed or not) and income (measured in Great British Pounds earned per month), as well as whether the respondent used the internet daily or not. Table 6 presents the results of these models.

These basic models show that controlling for respondent demographics, previous mode preference response is strongly and positively related to which mode the respondent will select into. Respondents were more than two times more likely to select into the web survey when they stated web as the preferred mode at fourth wave, and two times more likely to select into the face-to-face survey when choosing this as their preferred mode. Internet use is also strongly related to mode selection, in an expected way. Those using the internet daily are more three times more likely to select into the web survey, while those not using the internet as frequently are estimated to be more than three and a half times ($1/0.280 = 3.571$) more likely to select into the CAPI survey. White and employed respondents were more likely to select into the web survey, while minorities and unemployed respondents were more likely to select into the CAPI survey.

That respondents' selection of mode is related to their previously stated mode preference suggests that the measure does predict outcomes usefully. It may be that although mode preference is affected by the context and prone to change among a large percentage of respondents, some respondents do have actual consistent mode preferences. If so, the positive results in Table 6 and found elsewhere may be driven by these consistent preferences. Indeed, while it is the case that 50.7% of respondents changed their mode preference at least once across the three waves, it also means that 49.3% of respondents gave the same mode preference response at each time point.

Understanding who has stable mode preferences could lead to better use of this measure by allowing focus on those respondents for who mode most likely matters. As initial step in understanding who is more likely to change and more likely to have stable mode preferences, Table 7 presents chi-square tests of tabula-

Table 7 Percent Reporting Same Preference Across Waves by Respondent Characteristics

	% Same Preference W4 and W5	% Same Preference W5 and W6	% Same Preference All Waves
<i>Sex</i>			
Females	58.4	73.0	48.4
Males	63.3	73.6	50.4
χ^2 <i>p</i> -value	0.056	0.816	0.458
<i>Age</i>			
<=25	50.9	66.0	34.0
25-55	60.3	73.8	48.5
55-65	57.6	72.2	46.9
>65	66.3	75.0	56.5
χ^2 <i>p</i> -value	0.015	0.974	0.0004
<i>Education</i>			
University/Professional Degree	60.1	73.6	48.4
Other	61.5	72.6	50.1
χ^2 <i>p</i> -value	0.596	0.664	0.344
<i>Employment Status</i>			
Employed	58.9	71.8	46.6
Unemployed/Not in Labor Force	61.9	74.5	51.6
χ^2 <i>p</i> -value	0.231	0.240	0.056
<i>Income (Quartiles)</i>			
Qt1 (lowest)	58.8	71.2	47.1
Qt2	64.1	76.6	51.4
Qt3	58.3	74.1	49.6
Qt4 (Highest)	60.8	71.1	49.1
χ^2 <i>p</i> -value	0.362	0.265	0.718
<i>Race</i>			
British White	60.0	73.4	48.9
Other	66.2	72.2	53.4
χ^2 <i>p</i> -value	0.163	0.769	0.322
<i>Internet Frequency</i>			
Every day/Several Times a week	56.3	71.1	44.7
Several times a month or less	70.2	79.2	61.5
χ^2 <i>p</i> -value	<0.0001	0.002	<0.0001

tion of stability in providing the same mode preference by a number of respondent characteristics (p-values less than 0.05 in bold). For example, 58.4% of females and 63.3% of males had stable mode preference from Wave 4 to 5 (Column 1). From Wave 5 to 6, mode stability increased for both females (73.0%) and males (73.6%)

(Column 2). Looking across all three waves, 48.4% of females and 50.4% reported the same mode preference each time (Column 3). However, the differences in mode preference between females and males are not significant.

Examining the other respondent demographics (age, education, employment status, income and race) by mode preference stability, from wave to wave and overall, the only significant difference in mode preferences is by age groups. Specifically, those in the oldest age group (65 years or older) are more likely to have stable mode preferences than those in the younger age categories. Internet frequency was also examined and found to have significant differences among groups; those in the less frequent internet group are more likely to have stable mode preferences than those who use the internet daily. It is not surprising that age and internet frequency both have significant differences among groups, as age and internet usages is often highly correlated. In application, it is unlikely for survey researchers to know the respondent's internet usage prior to the interview. However, age may be a viable demographic to target mode preference matches to those with more stable mode preferences.

As a further step, multivariate analyses estimating the likelihood of changing a mode preference response is estimated using multilevel logistic regression. Each respondent had two chances to change their mode preferences: between Waves 4 and 5 and between Waves 5 and 6. These models account for the dichotomous nature of the outcome variable (change or not) as well as the structure of the data as the two outcomes of change are nested within respondents. Random intercept models are used, with the one random effect occurring at the respondents-level. The outcome is set to 1 if a change in mode preference occurred across waves, 0 if the same mode preference was given. The same respondent characteristics used in Table 6 are included in this model as well. Several variables remain constant across waves sex, education (which rarely changed across waves in this data), and race. The value at the wave of interest was used for employment status, income and whether the respondent used the internet daily or not.

Two indicators for web use were tested; first was the reported internet use, the second was whether the reported internet use had changed from the previous wave. This change could indicate more or less frequent internet use, which was contrasted to those who reported the same level of internet use to the prior wave. Given that neither indicator was significant and had little impact on other findings, change in use is presented in the final models. Additionally, given the importance noted of context, a measure is included if the respondent switched mode of response across waves. Respondents could have switched to the web survey from Waves 4 to 5 and Waves 5 to 6, and could have changed from the web to face-to-face from Waves 5 to 6. To examine context further, indicators for mode of response (web or not) and the question order mode preference was asked are also included. Missing data on

Table 8 Multilevel Odds Ratio Estimates for Change in Mode Preferences

	Mode Change
Less Internet Use	0.717
More Internet Use	1.042
Income	1.000
Age	0.988*
Employed	0.779*
Female	1.154
College/Professional Degree	0.918
White	1.227
Web Mode of Response	0.741
Question Order: Asked Specific First	1.049
Switched Mode of Response	8.532*
<i>Random-effects Parameters</i>	
Respondent Variance	1.851
ICC	0.360

*p<0.05; Responses = 2937; Respondents = 1473

some of the independent variables lead to four respondents to be excluded from the analysis. Table 8 presents the results from this model in terms of odds ratios.

The impact of switching mode of response after controlling for all of these other factors is striking. A switch in mode of response across waves is associated with odds of switching mode preferences estimated to be eight and a half times greater than someone responding in the same mode across waves. This strong relationship in change in answers and mode supports the argument that mode preference is largely an artefact of mode of response. Other survey contextual variables are not significantly related to changes in mode preference, further indicating the importance that mode of response has on the stability of mode preference responses.

However, there is evidence that there are some respondents more likely to have stable mode preferences. In particular, those older and employed are significantly more likely to maintain a stable mode preference across waves (as indicated by lower odds of change across waves). Further, the estimated respondent intra-class correlation (ICC) suggests that respondents account for 36% of the variability in mode preference changes. This ICC shows there is still a substantial portion of variance in mode change and stability remaining relating to respondents, even after controlling for a number of survey context and respondent characteristics.

4 Discussion

The above results present evidence on the nature of mode preferences, using three aspects not explored previously: the longitudinal measurement of mode preference; the effect of changes in mode of response on mode preferences; and the impact of question order on mode preference. The results generally point in one direction – that mode preference is not stable, and is heavily influenced by contextual factors. First, examining mode preferences over time from the same respondents show significant changes at the aggregate-level across the three years it was measured. The amount of individual-level change is even greater, with more than 50% of respondents switching their response at least once in the three years the question was asked; while a substantial percentage (15%) changed responses across all three waves.

Second, the context provided by question order affects the measurement of mode preference, likely due to a lack of chronically-available information. If people do not frequently contemplate in what mode they would most like to complete a survey (which seems likely), subsequently there will be a dearth of chronically-accessible information to draw upon, increasing the opportunity for context effects (Sudman et al. 1996). That more educated respondents were less impacted by question ordering is suggestive of the availability of information theory (Narayan and Krosnick 1996). In regards to the question ordering, when the mode preference question followed the specific mode questions (immediately so by the web-specific question) more thoughts about the mode could be generated, including both positive and negative toward the attitude object (Tourangeau et al. 2000). However, face-to-face interviews were not one of the modes specifically asked about before the mode preference question. Therefore, while more positive information about the asked modes (i.e., web, telephone and mail) may already have been in active memory relative to face-to-face interviews when mode preference was asked, so would have negative information. It may be that respondents relied more on this negative information, or more negative than positive thoughts were brought to mind in the preceding questions.

Third, the mode of response also apparently provides context affecting mode preference response. Mode preference at the aggregate largely coincided with the mode of response, and changes in mode preference at the individual level are strongly related to changes in mode of response. The findings support previous assertions that mode preference is an artefact of the mode of completion (Groves and Kahn 1979; Millar et al. 2009; Olson et al. 2012; Tarnai and Paxson 2004). It may be the respondent's survey behaviors provide the contextual information to the mode preference question (Schwarz and Bohner 2001). If people do not have a definite mode preference, which the evidence presented here suggests, then survey experience will be what brings about positive or negative thoughts for the mode of

response. If the experience is neutral, there still may be a lack of negative thoughts to create a negative opinion, and selection of the mode of response as the preferred mode will at least also be consistent with their choice to respond.

These results suggest that use of mode preference to adapt and tailor longitudinal survey should be done with great caution. The lack of reliability of the measure means that decisions made on responses at one wave may be meaningless the next. There may be no gains in costs or efficiency, and could be made worse, by relying on mode preference as a tailoring strategy in mixed-mode longitudinal designs. For example, CAPI data collection at one wave appears to create a greater number of respondents selecting face-to-face interviews as their preferred mode. If at the next wave, more of the sample was allocated to CAPI, when many would have been just as likely to respond via a less expensive mode, costs could be increased over a random allocation to mode.

While the results suggest that mode preference is unstable and should be viewed with caution, studies such as Olson et al. (2012) and Smyth et al. (2014) show a number of significant positive findings suggesting the utility of allocating on mode preference. Indeed, initial analysis of the same Innovation Panel data used here shows some relation between mode preferred at Wave 4 and survey response at Wave 5 (Kaminska and Lynn 2013). It is possible that a smaller portion of respondents do have real and stable mode preferences, and these respondents are driving the positive results cited. The results presented here suggest this possibility. Mode preference is related to the selected mode when a new mode option is added at a later wave, echoing the positive results elsewhere. Further, stability in mode preference across waves is significantly related to a limited number of utilized respondent characteristics (age, employment), while a sizable portion of the remaining variance is attributable to the respondent.

The problem for longitudinal studies is identifying these respondents who actually have stable mode preference (if they exist) prior to introducing a mixed-mode design. The limited number of respondent variables identified here are not likely enough to suggest a method to identify reliable mode preferences based on individual characteristics. Further understanding of respondent characteristics related to mode preference stability is therefore needed, and may include demographics, behaviors, and other attitudes. There are also possible methods to identify mode preference reliability. For example, Cernat (2015) uses latent Markov chains to estimate reliability of measures over time and modes. The caveat to the usage of any such methods is that a longitudinal survey would have to collect several waves (at least three) of mode preference measures before these could be employed. Further research should continue to explore when and how using mode preference in longitudinal data collection is useful; however, given the observed instability in the measure, it is not clear the extensive use of mode preference will be beneficial.

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Appendix A: Questions Used

Mode Preference (Target Question)

Thinking about all four ways in which we might ask you to take part in the future, including face-to-face, telephone, questionnaire sent by post or via the internet, which one would you most prefer?

- 1 A face-to-face interview at home
- 2 A telephone interview
- 3 A questionnaire sent by post
- 4 An internet questionnaire

Mode Rating Questions

Using a scale from 0 to 10 where 0 represents something you definitely would not do and 10 means something you definitely would do, if next year we approach you by telephone, how likely is it that you would complete the interview on the telephone?

And if next year we asked you to complete a paper questionnaire and return it to us by post, how likely is it that you would complete and return the questionnaire? (Presents the same scale as above).

And if next year we asked you to complete a questionnaire on the internet, how likely is it that you would complete the questionnaire? (Presents the same scale as above).